

## CLAIMS

### WHAT IS CLAIMED:

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1. A method for DC feed control for a line card, comprising:  
using an analog-to-digital converter for processing voice signals;  
receiving a signal from a subscriber line;  
converting the signal to a digital signal using the analog-to-digital converter utilized  
for processing voice signals; and  
adjusting the DC feed control of the line card based on the digital signal.
- 10 2. The method of claim 1, wherein adjusting the DC feed control includes:  
integrating the digital signal; and  
adjusting a voltage provided to the subscriber line based on the integrated signal.
- 15 3. The method of claim 2, wherein the signal is substantially a DC signal.
4. The method of claim 2, wherein the digital signal is representative of a current  
flowing from the subscriber line.
- 20 5. A method for DC feed control for a line card, comprising:  
determining if the line card is operating in a current limit region of a DC feed curve;  
synthesizing a curve in the current limit region;  
determining a loop voltage based on the synthesized curve; and  
applying the loop voltage to the subscriber line.

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6. The method of claim 5, wherein determining if the line card is operating in the current limit region includes:

generating a current value proportional to a loop current flowing from the subscriber line; and

5 determining if the line card is operating in the current limit region of the DC feed curve in response to generating the current value.

7. The method of claim 6, wherein determining if the line card is operating in the current limit region of the DC feed curve in response to generating the current value includes  
10 determining if the loop current is greater than a first preselected value.

8. The method of claim 5, further including determining the loop voltage in at least one of an anti-saturation region and a resistance feed region in response to determining the line card is not operating in the current limit region.

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9. A method for DC feed control for a line card, comprising:  
generating a current value proportional to a loop current flowing from a subscriber line;

determining if the line card is operating in a current limit region of a DC feed curve in  
20 response to generating the current value;

determining a loop voltage based on synthesizing a curve in the current limit region;  
and  
applying the loop voltage to the subscriber line.

10. The method of claim 9, wherein determining if the line card is operating in the current limit region of the DC feed curve in response to generating the current value includes determining if the loop current is greater than a first preselected value.

5 11. The method of claim 9, further including determining the loop voltage in at least one of an anti-saturation region and a resistance feed region in response to determining the line card is not operating in the current limit region.

12. An apparatus, comprising:

10 logic capable of:  
determining if the line card is operating in a current limit region of a DC feed curve; and  
determining a loop voltage based on a synthesized curve in the current limit region; and  
15 a circuitry for applying the loop voltage to the subscriber line.

13. The apparatus of claim 12, wherein the logic capable of determining if the line card is operating in the current limit region includes the logic capable of:

20 generating a current value proportional to a loop current flowing from the subscriber line; and

determining if the line card is operating in the current limit region of the DC feed curve in response to generating the current value.

25 14. The apparatus of claim 13, wherein the synthesized curve is based on an anti-saturation region and the current limit region of the DC feed curve.

15. The apparatus of claim 13, wherein the logic is further capable of determining the loop voltage in at least one of an anti-saturation region and a resistance feed region in response to determining the line card is not operating in the current limit region.

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16. An apparatus, comprising:

a first feedback loop, comprising:

an analog-to-digital converter for converting a signal from a subscriber line to a digital signal; and

10 first logic for receiving the digital signal and determining a cancellation current proportional to a current flowing from the subscriber line; and a second feedback loop, comprising second logic for adjusting a DC level control based on the determined cancellation current.

15 17. The apparatus of claim 16, wherein the first logic includes an integrator for integrating the digital signal.

18. The apparatus of claim 17, wherein the apparatus operates in at least one of an anti-saturation region, a resistive feed region, and a current limit region, wherein the first 20 logic includes a current limiter for limiting the digital signal to an upper limit of the current limit region.

19. The apparatus of claim 17, wherein the second logic for adjusting the DC level control includes providing a voltage to the subscriber line based on the cancellation current.

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20. A line card, comprising:  
a digital signal processor capable of:  
determining if the line card is operating in a current limit region of a DC feed  
curve; and  
5 determining a loop voltage based on a synthesized curve in the current limit  
region; and  
a subscriber line interface circuit capable of applying the loop voltage to the  
subscriber line.

10 21. The line card of claim 20, wherein the digital signal processor is further  
capable of determining the loop voltage in at least one of an anti-saturation region and a  
resistance feed region in response to determining the line card is not operating in the current  
limit region.

15 22. The line card of claim 20, wherein the subscriber line interface circuit is a  
voltage-feed subscriber line interface circuit.

20 23. An apparatus, comprising:  
means for determining if a line card is operating in a current limit region of a DC feed  
curve;  
means for determining if the line card is operating in a current limit region of a DC  
feed curve in response to generating the current value;  
means for determining a loop voltage based on synthesizing a curve in the current  
limit region; and  
25 means for applying the loop voltage to the subscriber line.